

### **AMENDMENTS TO THE DRAWINGS**

The attached Replacement Sheet of drawings includes changes to the label for Figure 2B. The amendments to the drawings correct minor editorial errors. In particular, Applicant's have amended Fig. 2A to be Fig. 2B.

Attachment: Replacement sheet

### **REMARKS**

This is intended as a full and complete response to the Office Action dated June 4, 2009, having a shortened statutory period for response set to expire on September 4, 2009. Please reconsider the claims pending in the application for reasons discussed below.

Claims 1-33, 40, and 41 remain pending in the application and are shown above. Claims 21, 22, 25, 28, and 40-41 have been cancelled. Claim 1 has been amended to include the subject matter of claims 21, 22, 25, 28, and 40-41. Claims 1-5, 8-17, 26, 27, and 32 are rejected, and Claims 6, 7, 18-25, 28-31, 33, 40, and 41 are objected to by the Examiner. Reconsideration of the rejected claims is requested for reasons presented below.

### ***Drawings***

The drawings are objected to because Applicant has supplied two drawings labeled 2A. The drawings have been amended to correct the error.

### ***Claim Rejections Under 35 USC § 102***

Claims 1-5, 8, 14-17, 26, 27, and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by *Seul et al.*, hereinafter *Seul*, (US 7,118,900).

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. *Verdegaal Brothers v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). In other words, the elements in the single prior art reference must be "arranged or combined in the same way as in the claim," *Net MoneyIN, Inc. v. VeriSign, Inc.*, 545 F.3d 1359, 1370 (Fed. Cir. 2008).

Applicants respectfully assert that independent claim 1 as currently amended is not anticipated by *Seul* under 35 U.S.C. § 102(e) because *Seul* does not describe each and every element of independent claim 1. In particular, *Seul* does not describe removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1. Furthermore, *Seul* does not describe any of the limitations from claims 21, 22, 25, 28, 40, and 41 which have been included in amended independent claim 1 as the Examiner has indicated that these claims are allowable. (Office Action dated June 4, 2009, p. 5.)

*Seul* teaches microparticles for repeated sensing application in an assay, (*Seul*, 8:13-17), i.e. detecting and studying binding interactions between a biomolecule and a target compound, one of them being offered at the surface of a particle or a cell and the target compound being a molecule, a metabolic product of living cells or a nano particle, (*Id.*, claim 1). The flow diagram in Figure 7 indicates the typical process flow of the used assay embodiment. Since beads repeatedly used in several assays need to be comparable, the indicated washing step at the end of a cycle is apparently intended to remove bound molecules from the particle. It seems that this washing step does not remove the particles from the gel forming substance. Example 13 entitled "Polymer-Microparticle Composites Using a Thermally Reversible Gel" gives a detailed description of two different tests performed sequentially with one and the same particle array. (*Id.*, 25:10-52, Figures 20A-20C.) However, no melting and no particle removal between different assays are described as the Gel is not destroyed and the particles are not freed. (*Id.*) Thus, *Seul* fails to teach, show, or suggest removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1.

Additionally, as *Seul* does not describe removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1, Applicants assert that claim 1 is not anticipated by *Seul* and respectfully request that the Examiner withdraw the rejection of independent claim 1 under 35 U.S.C. § 102(e).

Applicants additionally assert that each of dependent claims 2-5, 8, 14-17, 26-27 and 32 is allowable at least because each depends directly or indirectly from

claim 1, which is allowable for the reasons stated above. Therefore, Applicants assert that claims 2-5, 8, 14-17, 26-27 and 32 are patentable over *Seul* and respectfully request that the Examiner withdraw the rejection of dependent claims 2-5, 8, 14-17, 26-27 and 32 under 35 U.S.C. § 102(e).

### ***Claim Rejections Under 35 USC § 103***

Claims 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Seul* in light of *Cunliffe et al.* (hereinafter *Cunliffe*) (US 4,107,142).

To establish prima facie obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. (See MPEP 2143.03, *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA)).

Claims 9 and 12 depend directly or indirectly from claim 1, and include the elements and limitations recited therein.

As previously discussed herein, the teachings of *Seul* do not describe, teach, or suggest removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1.

The teachings of *Cunliffe* do not satisfy the deficiencies of *Seul*.

*Cunliffe* teaches a chemical modification of epoxy resin and teaches the use of methanol to disperse a gelled epoxy resin. (*Cunliffe*, 3:57-60.) Methanol, however, is known for its deleterious effect on biological molecules as a denaturing agent and would therefore be avoided by the skilled person in the art. Thus, a person of ordinary skill would not modify the teachings of *Seul* with *Cunliffe*. Additionally, *Cunliffe* fails to describe, teach, or suggest removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1.

Thus, combination of *Seul* and *Cunliffe* fails to teach, show, or suggest removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1.

As combination of *Seul* and *Cunliffe* fails to teach, show, or suggest each of the limitations of independent claim 1, Applicants respectfully assert that dependent claims 9 and 12 would not have been obvious to one of ordinary skill in the art at the time the invention was made, and request that the Examiner withdraw the rejection of dependent claims 9 and 12 under 35 U.S.C. § 103(a).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Seul* and *Cunliffe* in light of *Taylor* (US 2004/0265386).

Claim 10 depends indirectly from claim 1, and includes the elements and limitations recited therein.

As previously discussed herein, the teachings of *Seul* and *Cunliffe* do not describe, teach, or suggest removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1.

The teachings of *Taylor* do not satisfy the deficiencies of *Seul* and *Cunliffe*.

*Taylor* teaches a gel liquefaction by analyte binding when discussing a glucose sensor with gel-sol transition. (*Taylor*, [0004].) Combined with *Seul*, the liquefaction of the gel which holds the particle in its array position for optical measurement would guide the person of ordinary skill in the art away from the use of particle-gel composites, because the image comparison procedure of *Seul* would be impossible in a liquid. Therefore, a person of ordinary skill would not modify the teachings of *Seul* and *Cunliffe* with *Taylor*. Additionally, *Taylor* fails to describe, teach, or suggest removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1.

Thus, combination of *Seul*, *Cunliffe*, and *Taylor* fails to teach, show, or suggest removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1.

As combination of *Seul*, *Cunliffe*, and *Taylor* fails to teach, show, or suggest each of the limitations of independent claim 1, Applicants respectfully assert that

dependent claim 10 would not have been obvious to one of ordinary skill in the art at the time the invention was made, and request that the Examiner withdraw the rejection of dependent claim 10 under 35 U.S.C. § 103(a).

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Seul* and *Cunliffe* in light of *Navratil et al.* (hereinafter *Navratil*) (US 4,743,633).

Claim 11 depends indirectly from claim 1, and includes the elements and limitations recited therein.

As previously discussed herein, the teachings of *Seul* and *Cunliffe* do not describe, teach, or suggest removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1.

The teachings of *Navratil* do not satisfy the deficiencies of *Seul* and *Cunliffe*.

*Navratil* teaches the generation of lignosulfonate gels under the influence of aqueous formaldehyde or tannin solutions through plugging of high permeability zones in oil bearing strata under the influence of temperature (Example 5) and water vapor injection for gelling (Example 9 and 10). Because of their known cross-linking effect on biological molecules, neither formaldehyde and tannin solutions, nor an incubation at 105 °C lasting 12-16 hours (*Navratil*, 225:35-38, 21:49-51) would be considered by a person of ordinary skill in the art in connection with specific binding of biomolecules as described in *Seul*. Thus, Applicants submit that *Navratil* prevents a person of ordinary skill in the art from temperature induced gelation. Therefore, a person of ordinary skill would not modify the teachings of *Seul* and *Cunliffe* with *Navratil*. Additionally, *Navratil* fails to describe, teach, or suggest removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1.

Thus, combination of *Seul*, *Cunliffe*, and *Navratil* fails to teach, show, or suggest removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1.

As combination of *Seul*, *Cunliffe*, and *Navratil* fails to teach, show, or suggest each of the limitations of independent claim 1, Applicants respectfully assert that dependent claim 11 would not have been obvious to one of ordinary skill in the art at the time the invention was made, and request that the Examiner withdraw the rejection of dependent claim 11 under 35 U.S.C. § 103(a).

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over *Seul* in light of *Brautigam et al.* (hereinafter *Brautigam*) (US 4,964,961).

Claim 13 depends indirectly from claim 1, and includes the elements and limitations recited therein.

As previously discussed herein, the teachings of *Seul* do not describe, teach, or suggest removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1.

The teachings of *Brautigam* do not satisfy the deficiencies of *Seul*.

*Brautigam* teaches the use of chemical means for decomposing gel material for electrophoretic elution of substances from a gel. However, the glass beads used to adsorb components have not been incorporated in the gel before. Rather, a chemically decomposed gel has been merely poured over separate glass beads which adsorb the components from the buffer solution with liquefied gel letting the liquid pass by. Dissolved components are afterwards removed from the beads by elution with a salt solution. (*Brautigam*, 2:1-8.) Therefore, no glass beads are recovered from gel in *Brautigam*. Additionally, the destruction of the gel forming agent would be against the whole concept of *Seul* which explicitly declares the concept of repeatedly liquefied gel as an advantage. If the gel forming agent would be destroyed, it could not be liquefied (and gelled) repeatedly.

Therefore, a person of ordinary skill would not modify the teachings of *Seul* with *Brautigam*. Additionally, *Brautigam* fails to describe, teach, or suggest removing

modified microparticles from the gelatinous carrier medium, as recited in independent claim 1.

Thus, combination of *Seul* and *Brautigam* fails to teach, show, or suggest removing modified microparticles from the gelatinous carrier medium, as recited in independent claim 1.

As combination of *Seul* and *Brautigam* fails to teach, show, or suggest each of the limitations of independent claim 1, Applicants respectfully assert that dependent claim 13 would not have been obvious to one of ordinary skill in the art at the time the invention was made, and request that the Examiner withdraw the rejection of dependent claim 13 under 35 U.S.C. § 103(a).

***Allowable Subject Matter***

Claims 6, 7, 18-25, 28-31, 33, 40, and 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 21, 22, 25, 28, 40, and 41 have been cancelled. The subject matter of claims 21, 22, 25, 29, 40, and 41 has been included in amended independent claim 1 in interest of speeding up the examination process. Applicants wish to thank the Examiner for the allowable subject matter.




**Conclusion**

In conclusion, the references cited by the Examiner, alone or in combination, do not teach, show, or suggest the invention as claimed.

Having addressed all issues set out in the office action, Applicant respectfully submits that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,

By 

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